Copyright. Papers accepted become the copyright of the journal (© 1987 The Royal Microscopical Society). Authorization to photocopy for internal or personal use or the internal or personal use of specific clients is granted by The Royal Microscopical Society for libraries and other users registered with the Copyright Clearance Centre (CCC) Transactional Reporting Service, provided that the stated base fee of $03.00 per copy is paid directly to the CCC, 27 Congress Street, Salem, MA 01970, U.S.A. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Special requests should be addressed to the Editor. 0022-2720/87 $03.00.

Contents of Vol. 148

Part 1

YOSHIAKI HORIKAWA, MITSUNORI YAMAMOTO and SHINICHI DOSAKA. Laser scanning microscope: differential phase images 1
M. PLUTA. Single-ring polanret phase-contrast system 11
J. GROSMAIRE, B. NONGAILLARD, J. M. ROUVAEN, H. SAISSE, H. FEVRIER and S. JOSEPH. Application of acoustic microscopy to the measurement of some physical parameters of ceramics 21
PER SKJERPE. An electron microscopy study of the phase Al_3Fe 33
DAVID S. BRIGHT. A LISP-based image analysis system with applications to microscopy 51
R. G. NAGELE and H. LEE. A new method for the preparation of 'double-fixed', quick-frozen, freeze-substituted cells for whole-cell transmission electron microscopy 89

Short Technical Notes
Y. SHIBATA, T. IZUMI and T. YAMAMOTO. Upside-down etching; a simple method for reducing unetchable sediment during deep-etching of fresh untreated tissues 97
STUART CRAIG, JOHN C. GILKEY and L. ANDREW STAEHELIN. Improved specimen support cups and auxiliary devices for the Balzers high pressure freezing apparatus 103
K. S. BEDI. A simple method for measuring the thickness of semi-thin and ultra-thin sections 107
D. TOLIVIA and J. TOLIVIA. Fasga: a new polychromatic method for simultaneous and differential staining of plant tissues 113

Part 2

Editorial 119
HANSGEORG PAPE, LUTZ RIEPE and JÜRGEN R. SCHOPPER. Theory of self-similar network structures in sedimentary and igneous rocks and their investigation with microscopical and physical methods 121
DUAN JIAN-ZHONG and WU ZI-QIN. Fractal agglomeration during crystallization of Pd–Si alloy films 149
R. F. EGERTON and P. A. CROZIER. A compact parallel-recording detector for EELS 157
G. WIRMARK and H. NORDÉN. A study of factors influencing the accuracy of quantitative X-ray analysis of thin foil specimens 167
J. BROWN, P. K. FOOTNER and B. P. RICHARDS. Failure analysis of plastic encapsulated components—the advantages of IR microscopy 179

J. Seymour and D. J. DeRosier. The projection of a negatively-stained filamentous object down its central axis as revealed by image reconstruction from tilt series 195
M. K. Lamvik, D. A. Kopf and S. D. Davilla. Mass loss rate in collodion is greatly reduced at liquid helium temperature 211

Short Technical Note
P. J. Edwards and C. A. Jeffryes. Application of the GTGO–AD procedure in the scanning electron microscopy of streptococci adhered to pellicle-coated dental enamel 219

Part 3

Subhash Chandra, Walter A. Ausserer and George H. Morrison. Evaluation of matrix effects in ion microscopic analysis of freeze-fractured, freeze-dried cultured cells 223
D. B. Williams, R. Levi-Setti, J. M. Chabala and D. E. Newbury. High spatial resolution secondary ion imaging and secondary ion mass spectrometry of aluminium–lithium alloys 241
Paul J. McMillan, Andrew Yakush, Gary Frykman, P. Ben Nava and Vicky R. Ras. Minima equalization: a useful strategy in automatic processing of microscopic images 253
John C. Russ and J. Christian Russ. Automatic discrimination of features in grey-scale images 263
P. A. Crozier, J. N. Chapman, A. J. Craven and J. M. Titchmarsh. On the determination of inner-shell cross-section ratios from NiO using EELS 279
S. C. Cheng, P. A. Crozier and R. F. Egerton. Deadtime corrections for a pulse counting system in electron energy loss spectroscopy 285
Lou Suichu, Zhang Yongsheng and Wu Ziqin. A Monte Carlo calculation of secondary electrons emitted from Au, Ag and Cu 289
Dietrich Stoyan and Wolfgang Gerlach. Stereological determination of curvature distributions of spatial fibre systems 297
A. C. Fabergé. Improvements in the fabrication of thin foil apertures for electron microscopy 307
Book Review 311